```
;                                   Logrithm Math

;    The following Algorithms show how to convert 4 byte binary
;numbers into base2 logrithms, and base2 logrithms into numbers.

;To convert a number into a base2 logrithm, load the VAL1-4
;registers (low to high byte) with the number to convert then call
;GET_LOG.  The base2 logrithm mantissa will be returned in the
;VAL1-4 registers (low to high byte), and the log characteristic
;in the CHAR register.

;To convert a base2 logrithm into a number, load the VAL1-4
;registers (low to high byte) with the mantissa, and the CHAR
;register with the Charateristic, and call ANTI_LOG.  The number
;will be returned in the VAL1-4 registers (low to high byte).

;                  ************************************
```

;Math and Misc. Registers

```
VAL1        EQU     31H     ;Put the value here then call the
VAL2        EQU     32H     ;GET_LOG routine, or put the Log
VAL3        EQU     33H     ;here then call ANTI_LOG
VAL4        EQU     34H
CHAR        EQU     35H

;                       ************************
;          Get the base2 LOG of the number in the VAL1-4 Registers
;               1) - convert the number to its logrithm value
;               2) - put the answer in the VAL1-4 registers
;               3) - correct the log value in the VAL registers

GET_LOG:    MOV     A,VAL4
            JNZ     LOG_4BT7
            JMP     LOG_TST_3BY

LOG_4BT7:   JNB     ACC.7,LOG_4BT6

            MOV     CHAR,#031

            MOV     A,VAL4
            ANL     A,#01111111B
            RL      A
            MOV     VAL4,A
            MOV     A,VAL3
            ANL     A,#10000000B
            RL      A
            XRL     VAL4,A

            MOV     A,VAL3
            ANL     A,#01111111B
            RL      A
            MOV     VAL3,A
            MOV     A,VAL2
            ANL     A,#10000000B
            RL      A
            XRL     VAL3,A

            MOV     A,VAL2
            ANL     A,#01111111B
            RL      A
            MOV     VAL2,A
            MOV     A,VAL1
            ANL     A,#10000000B
```

```
                        RL      A
                        XRL     VAL2,A

                        MOV     A,VAL1
                        ANL     A,#01111111B
                        RL      A
                        MOV     VAL1,A
                        JMP     AD_CORR
;                               ------------------------
LOG_4BT6:               JNB     ACC.6,LOG_4BT5

                        MOV     CHAR,#030

                        MOV     A,VAL4
                        ANL     A,#00111111B
                        RL      A
                        RL      A
                        MOV     VAL4,A
                        MOV     A,VAL3
                        ANL     A,#11000000B
                        RL      A
                        RL      A
                        XRL     VAL4,A

                        MOV     A,VAL3
                        ANL     A,#00111111B
                        RL      A
                        RL      A
                        MOV     VAL3,A
                        MOV     A,VAL2
                        ANL     A,#11000000B
                        RL      A
                        RL      A
                        XRL     VAL3,A
```

```
                        MOV     A,VAL2
                        ANL     A,#00111111B
                        RL      A
                        RL      A
                        MOV     VAL2,A
                        MOV     A,VAL1
                        ANL     A,#11000000B
                        RL      A
                        RL      A
                        XRL     VAL2,A

                        MOV     A,VAL1
                        ANL     A,#00111111B
                        RL      A
                        RL      A
                        MOV     VAL1,A
                        JMP     AD_CORR

;                               ------------------------

LOG_4BT5:               JNB     ACC.5,LOG_4BT4

                        MOV     CHAR,#029

                        MOV     A,VAL4
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        MOV     VAL4,A
                        MOV     A,VAL3
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        XRL     VAL4,A

                        MOV     A,VAL3
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        MOV     VAL3,A
                        MOV     A,VAL2
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        XRL     VAL3,A

                        MOV     A,VAL2
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        MOV     VAL2,A
                        MOV     A,VAL1
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        XRL     VAL2,A

                        MOV     A,VAL1
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        MOV     VAL1,A
                        JMP     AD_CORR

;                               ------------------------

LOG_4BT4:               JNB     ACC.4,LOG_4BT3

                        MOV     CHAR,#028

                        MOV     A,VAL4
                        ANL     A,#00001111B
```

```
                SWAP    A
                MOV     VAL4,A
                MOV     A,VAL3
                ANL     A,#11110000B
                SWAP    A
                XRL     VAL4,A

                MOV     A,VAL3
                ANL     A,#00001111B
                SWAP    A
                MOV     VAL3,A
                MOV     A,VAL2
                ANL     A,#11110000B
                SWAP    A
                XRL     VAL3,A

                MOV     A,VAL2
                ANL     A,#00001111B
                SWAP    A
                MOV     VAL2,A
                MOV     A,VAL1
                ANL     A,#11110000B
                SWAP    A
                XRL     VAL2,A

                MOV     A,VAL1
                ANL     A,#00001111B
                SWAP    A
                MOV     VAL1,A
                JMP     AD_CORR

;                       ------------------------

LOG_4BT3:       JNB     ACC.3,LOG_4BT2

                MOV     CHAR,#027

                MOV     A,VAL4
                ANL     A,#00000111B
                SWAP    A
                RL      A
                MOV     VAL4,A
                MOV     A,VAL3
                ANL     A,#11111000B
                SWAP    A
                RL      A
                XRL     VAL4,A

                MOV     A,VAL3
                ANL     A,#00000111B
                SWAP    A
                RL      A
                MOV     VAL3,A
                MOV     A,VAL2
                ANL     A,#11111000B
                SWAP    A
                RL      A
                XRL     VAL3,A

                MOV     A,VAL2
                ANL     A,#00000111B
                SWAP    A
                RL      A
                MOV     VAL2,A
                MOV     A,VAL1
                ANL     A,#11111000B
                SWAP    A
                RL      A
                XRL     VAL2,A

                MOV     A,VAL1
                ANL     A,#00000111B
```

```
                    SWAP    A
                    RL      A
                    MOV     VAL1,A
                    JMP     AD_CORR
;                           ------------------------
LOG_4BT2:           JNB     ACC.2,LOG_4BT1
                    MOV     CHAR,#026
                    MOV     A,VAL4
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL4,A
                    MOV     A,VAL3
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    XRL     VAL4,A
                    MOV     A,VAL3
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL3,A
                    MOV     A,VAL2
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    XRL     VAL3,A
                    MOV     A,VAL2
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL2,A
                    MOV     A,VAL1
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    XRL     VAL2,A
                    MOV     A,VAL1
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL1,A
                    JMP     AD_CORR
;                           ------------------------
LOG_4BT1:           JNB     ACC.1,LOG_4BT0
                    MOV     CHAR,#025
                    MOV     A,VAL4
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL4,A
                    MOV     A,VAL3
                    ANL     A,#11111110B
                    RR      A
                    XRL     VAL4,A
                    MOV     A,VAL3
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL3,A
                    MOV     A,VAL2
                    ANL     A,#11111110B
```

```
                    RR      A
                    XRL     VAL3,A

                    MOV     A,VAL2
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL2,A
                    MOV     A,VAL1
                    ANL     A,#11111110B
                    RR      A
                    XRL     VAL2,A

                    MOV     A,VAL1
                    ANL     A,#00000001B
                    RR      A
                    RR      A
                    MOV     VAL1,A
                    JMP     AD_CORR

;                           ------------------------

LOG_4BT0:           MOV     CHAR,#024

                    MOV     VAL4,VAL3
                    MOV     VAL3,VAL2
                    MOV     VAL2,VAL1
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                       ************************

LOG_TST_3BY:        MOV     A,VAL3
                    JNZ     LOG_3BT7
                    JMP     LOG_TST_2BY

LOG_3BT7:           JNB     ACC.7,LOG_3BT6

                    MOV     CHAR,#023

                    MOV     A,VAL3
                    ANL     A,#01111111B
                    RL      A
                    MOV     VAL4,A
                    MOV     A,VAL2
                    ANL     A,#10000000B
                    RL      A
                    XRL     VAL4,A

                    MOV     A,VAL2
                    ANL     A,#01111111B
                    RL      A
                    MOV     VAL3,A
                    MOV     A,VAL1
                    ANL     A,#10000000B
                    RL      A
                    XRL     VAL3,A

                    MOV     A,VAL1
                    ANL     A,#01111111B
                    RL      A
                    MOV     VAL2,A
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_3BT6:           JNB     ACC.6,LOG_3BT5

                    MOV     CHAR,#022

                    MOV     A,VAL3
                    ANL     A,#00111111B
```

```
                    RL      A
                    RL      A
                    MOV     VAL4,A
                    MOV     A,VAL2
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    XRL     VAL4,A

                    MOV     A,VAL2
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    MOV     VAL3,A
                    MOV     A,VAL1
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    XRL     VAL3,A

                    MOV     A,VAL1
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    MOV     VAL2,A
                    MOV     VAL1,#000
                    JMP     AD_CORR
;                           ------------------------
LOG_3BT5:           JNB     ACC.5,LOG_3BT4

                    MOV     CHAR,#021

                    MOV     A,VAL3
                    ANL     A,#00011111B
                    SWAP    A
                    RR      A
                    MOV     VAL4,A
                    MOV     A,VAL2
                    ANL     A,#11100000B
                    SWAP    A
                    RR      A
                    XRL     VAL4,A

                    MOV     A,VAL2
                    ANL     A,#00011111B
                    SWAP    A
                    RR      A
                    MOV     VAL3,A
                    MOV     A,VAL1
                    ANL     A,#11100000B
                    SWAP    A
                    RR      A
                    XRL     VAL3,A

                    MOV     A,VAL1
                    ANL     A,#00011111B
                    SWAP    A
                    RR      A
                    MOV     VAL2,A
                    MOV     VAL1,#000
                    JMP     AD_CORR
;                           ------------------------
LOG_3BT4:           JNB     ACC.4,LOG_3BT3

                    MOV     CHAR,#020

                    MOV     A,VAL3
                    ANL     A,#00001111B
```

```
                SWAP    A
                MOV     VAL4,A
                MOV     A,VAL2
                ANL     A,#11110000B
                SWAP    A
                XRL     VAL4,A

                MOV     A,VAL2
                ANL     A,#00001111B
                SWAP    A
                MOV     VAL3,A
                MOV     A,VAL1
                ANL     A,#11110000B
                SWAP    A
                XRL     VAL3,A

                MOV     A,VAL1
                ANL     A,#00001111B
                SWAP    A
                MOV     VAL2,A

                MOV     VAL1,#000
                JMP     AD_CORR

;                       ------------------------

LOG_3BT3:       JNB     ACC.3,LOG_3BT2

                MOV     CHAR,#019

                MOV     A,VAL3
                ANL     A,#00000111B
                SWAP    A
                RL      A
                MOV     VAL4,A
                MOV     A,VAL2
                ANL     A,#11111000B
                SWAP    A
                RL      A
                XRL     VAL4,A

                MOV     A,VAL2
                ANL     A,#00000111B
                SWAP    A
                RL      A
                MOV     VAL3,A
                MOV     A,VAL1
                ANL     A,#11111000B
                SWAP    A
                RL      A
                XRL     VAL3,A

                MOV     A,VAL1
                ANL     A,#00000111B
                SWAP    A
                RL      A
                MOV     VAL2,A

                MOV     VAL1,#000
                JMP     AD_CORR

;                       ------------------------

LOG_3BT2:       JNB     ACC.2,LOG_3BT1

                MOV     CHAR,#018

                MOV     A,VAL3
                ANL     A,#00000011B
                RR      A
                RR      A
                MOV     VAL4,A
```

```
                    MOV     A,VAL2
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    XRL     VAL4,A

                    MOV     A,VAL2
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL3,A
                    MOV     A,VAL1
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    XRL     VAL3,A

                    MOV     A,VAL1
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL2,A

                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_3BT1:           JNB     ACC.1,LOG_3BT0

                    MOV     CHAR,#017

                    MOV     A,VAL3
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL4,A
                    MOV     A,VAL2
                    ANL     A,#11111110B
                    RR      A
                    XRL     VAL4,A

                    MOV     A,VAL2
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL3,A
                    MOV     A,VAL1
                    ANL     A,#11111110B
                    RR      A
                    XRL     VAL3,A

                    MOV     A,VAL1
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL2,A

                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_3BT0:           MOV     CHAR,#016

                    MOV     VAL4,VAL2
                            MOV                     VAL3,VAL1
                    MOV     VAL2,#000
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                       **************************

LOG_TST_2BY:        MOV     A,VAL2
                    JNZ     LOG_2BT7
```

```
                JMP     LOG_TST_1BY

LOG_2BT7:       JNB     ACC.7,LOG_2BT6

                MOV     CHAR,#015

                MOV     A,VAL2
                ANL     A,#01111111B
                RL      A
                MOV     VAL4,A
                MOV     A,VAL1
                ANL     A,#10000000B
                RL      A
                XRL     VAL4,A

                MOV     A,VAL1
                ANL     A,#01111111B
                RL      A
                MOV     VAL3,A

                MOV     VAL2,#000
                MOV     VAL1,#000
                JMP     AD_CORR

;                       ------------------------

LOG_2BT6:       JNB     ACC.6,LOG_2BT5

                MOV     CHAR,#014

                MOV     A,VAL2
                ANL     A,#00111111B
                RL      A
                RL      A
                MOV     VAL4,A
                MOV     A,VAL1
                ANL     A,#11000000B
                RL      A
                RL      A
                XRL     VAL4,A

                MOV     A,VAL1
                ANL     A,#00111111B
                RL      A
                RL      A
                MOV     VAL3,A

                MOV     VAL2,#000
                MOV     VAL1,#000
                JMP     AD_CORR

;                       ------------------------

LOG_2BT5:       JNB     ACC.5,LOG_2BT4

                MOV     CHAR,#013

                MOV     A,VAL2
                ANL     A,#00011111B
                SWAP    A
                RR      A
                MOV     VAL4,A
                MOV     A,VAL1
                ANL     A,#11100000B
                SWAP    A
                RR      A
                XRL     VAL4,A

                MOV     A,VAL1
                ANL     A,#00011111B
                SWAP    A
                RR      A
```

```
                    MOV     VAL3,A

                    MOV     VAL2,#000
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_2BT4:           JNB     ACC.4,LOG_2BT3

                    MOV     CHAR,#012

                    MOV     A,VAL2
                    ANL     A,#00001111B
                    SWAP    A
                    MOV     VAL4,A
                    MOV     A,VAL1
                    ANL     A,#11110000B
                    SWAP    A
                    XRL     VAL4,A

                    MOV     A,VAL1
                    ANL     A,#00001111B
                    SWAP    A
                    MOV     VAL3,A

                    MOV     VAL2,#000
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_2BT3:           JNB     ACC.3,LOG_2BT2

                    MOV     CHAR,#011

                    MOV     A,VAL2
                    ANL     A,#00000111B
                    SWAP    A
                    RL      A
                    MOV     VAL4,A
                    MOV     A,VAL1
                    ANL     A,#11111000B
                    SWAP    A
                    RL      A
                    XRL     VAL4,A

                    MOV     A,VAL1
                    ANL     A,#00000111B
                    SWAP    A
                    RL      A
                    MOV     VAL3,A

                    MOV     VAL2,#000
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_2BT2:           JNB     ACC.2,LOG_2BT1

                    MOV     CHAR,#010

                    MOV     A,VAL2
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL4,A
                    MOV     A,VAL1
                    ANL     A,#11111100B
                    RR      A
                    RR      A
```

```
                    XRL     VAL4,A

                    MOV     A,VAL1
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    MOV     VAL3,A

                    MOV     VAL2,#000
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_2BT1:           JNB     ACC.1,LOG_2BT0

                    MOV     CHAR,#009

                    MOV     A,VAL2
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL4,A
                    MOV     A,VAL1
                    ANL     A,#11111110B
                    RR      A
                    XRL     VAL4,A

                    MOV     A,VAL1
                    ANL     A,#00000001B
                    RR      A
                    MOV     VAL3,A

                    MOV     VAL2,#000
                    MOV     VAL1,#000
                    JMP     AD_CORR

;                           ------------------------

LOG_2BT0:           MOV     CHAR,#008

                    MOV     VAL4,VAL1
                    MOV     VAL3,#000H
                    MOV     VAL2,#000H
                    MOV     VAL1,#000H
                    JMP     AD_CORR

;                           ************************

LOG_TST_1BY:        MOV     A,VAL1
                    JNB     ACC.7,LOG_1BT6

                    MOV     CHAR,#007

                    CLR     C
                    MOV     A,VAL1
                    RLC     A
                    MOV     VAL4,A

                    MOV     VAL3,#000H
                    MOV     VAL2,#000H
                    MOV     VAL1,#000H
                    JMP     AD_CORR

;                           ------------------------

LOG_1BT6:           JNB     ACC.6,LOG_1BT5

                    MOV     CHAR,#006

                    MOV     A,VAL1
                    CLR     C
                    RLC     A
```

```
                        CLR     C
                        RLC     A
                        MOV     VAL4,A

                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        JMP     AD_CORR

;                               ------------------------

LOG_1BT5:               JNB     ACC.5,LOG_1BT4

                        MOV     CHAR,#005

                        MOV     A,VAL1
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        MOV     VAL4,A

                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        JMP     AD_CORR

;                               ------------------------

LOG_1BT4:               JNB     ACC.4,LOG_1BT3

                        MOV     CHAR,#004

                        MOV     A,VAL1
                        ANL     A,#00001111B
                        SWAP    A
                        MOV     VAL4,A

                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        JMP     AD_CORR

;                               ------------------------

LOG_1BT3:               JNB     ACC.3,LOG_1BT2

                        MOV     CHAR,#003

                        MOV     A,VAL1
                        ANL     A,#00000111B
                        SWAP    A
                        RL      A
                        MOV     VAL4,A

                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        JMP     AD_CORR

;                               ------------------------

LOG_1BT2:               JNB     ACC.2,LOG_1BT1

                        MOV     CHAR,#002

                        MOV     A,VAL1
                        ANL     A,#00000011B
                        RR      A
                        RR      A
                        MOV     VAL4,A

                        MOV     VAL3,#000H
```

```
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        JMP     AD_CORR

;                               ------------------------

LOG_1BT1:               JNB     ACC.1,LOG_1BT0

                        MOV     CHAR,#001

                        MOV     A,VAL1
                        ANL     A,#00000001B
                        RR      A
                        MOV     VAL4,A

                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        JMP     AD_CORR

;                               ------------------------

LOG_1BT0:               JNB     ACC.0,LOG_0BT0

                        MOV     CHAR,#000

                        MOV     VAL4,#000H
                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#001H
                        JMP     AD_CORR

;                               ------------------------

LOG_0BT0:               MOV     CHAR,#000

                        MOV     VAL4,#000H
                        MOV     VAL3,#000H
                        MOV     VAL2,#000H
                        MOV     VAL1,#000H
                        RET

;                               **********************
;Add the correction factor to the computed logrithm value.
;Since the Log correction table is 2 bytes per correction, the pointer will be incremented twice for any adjustment.

AD_CORR:                MOV     A,VAL4
                        MOV     DPTR,#LOGTBL
                        ADD     A,DPL
                        MOV     DPL,A
                        MOV     A,DPH
                        ADDC    A,#0
                        MOV     DPH,A

                        MOV     A,VAL4
                        ADD     A,DPL
                        MOV     DPL,A
                        MOV     A,DPH
                        ADDC    A,#0
                        MOV     DPH,A

                        CLR     A
                        MOVC    A,@A+DPTR
                        ADD     A,VAL3
                        MOV     VAL3,A

                        CLR     A
                        INC     DPTR
                        MOVC    A,@A+DPTR
                        ADDC    A,VAL4
                        MOV     VAL4,A
```

```
        MOV     A,CHAR
        ADDC    A,#0
        MOV     CHAR,A
        RET
;                       **********
```

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```
;                    Anti-Logrithm Math

;    The following Algorithms show how to convert 4 byte base2
;logrithms into Binary numbers. Retrieve the base2 ANTI-LOG in the
;VAL1-4 Registers

;First - check to see if the number is zero - if it is - abort
;Second   - correct the log value in the VAL registers
;Third - convert the log to its number value
;Fourth - put the answer in the VAL1-4 registers

;Since the Log correction table is 2 bytes per correction,
;the pointer will be incremented twice for any adjustment.

;          ****************************************

ANTI_LOG:       MOV     A,CHAR          ;Ok if regs. =/= 0
                JNZ     ALOG_OK
                MOV     A,VAL4
                JNZ     ALOG_OK
                MOV     A,VAL3
                JNZ     ALOG_OK
                MOV     A,VAL2
                JNZ     ALOG_OK
                MOV     A,VAL1
                JNZ     ALOG_OK
                RET

ALOG_OK:        MOV     A,VAL4          ;Get the correction
                MOV     DPTR,#LOGTBL    ;  table address
                ADD     A,DPL
                MOV     DPL,A
                MOV     A,DPH
                ADDC    A,#0
                MOV     DPH,A

                MOV     A,VAL4
                ADD     A,DPL
                MOV     DPL,A
                MOV     A,DPH
                ADDC    A,#0
                MOV     DPH,A

                MOV     PSW,#0          ;subtract the correction
                CLR     A               ;factor from the log value
                MOVC    A,@A+DPTR
                XCH     A,VAL3
                SUBB    A,VAL3
                MOV     VAL3,A

                INC     DPTR
                CLR     A
                MOVC    A,@A+DPTR
                XCH     A,VAL4
                SUBB    A,VAL4
                MOV     VAL4,A

                MOV     A,CHAR
                SUBB    A,#0
                MOV     CHAR,A
```

```
;                                   ------------------------
;                           Convert the log to its number value

                    MOV     A,CHAR
                    CJNE    A,#023,ALOG_4BTHL         ; <= 24 ?

ALOG_CHK_3BYTE:     JMP     ALOG_A3_BT7               ; = 24

ALOG_4BTHL:         JC      ALOG_CHK_3BYTE            ; < 24

                    CJNE    A,#031,ALOG_4BT6

                            CLR                       C
                    MOV     A,VAL4
                    RRC     A
                    SETB    ACC.7
                    MOV     VAL4,A
                    MOV     A,VAL3
                    RRC     A
                    MOV     VAL3,A
                    MOV     A,VAL2
                    RRC     A
                    MOV     VAL2,A
                    MOV     A,VAL1
                    RRC     A
                    MOV     VAL1,A
                    RET

;                           ------------------------

ALOG_4BT6:          CJNE    A,#030,ALOG_4BT5

                    CLR     C
                    MOV     A,VAL4
                    RRC     A
                    MOV     VAL4,A

                    MOV     A,VAL3
                    RRC     A
                    MOV     VAL3,A

                    MOV     A,VAL2
                    RRC     A
                    MOV     VAL2,A

                    MOV     A,VAL1
                    RRC     A
                    MOV     VAL1,A

                    CLR     C
                    MOV     A,VAL4
                    RRC     A
                    SETB    ACC.6
                    MOV     VAL4,A

                    MOV     A,VAL3
                    RRC     A
                    MOV     VAL3,A

                    MOV     A,VAL2
                    RRC     A
                    MOV     VAL2,A

                    MOV     A,VAL1
                    RRC     A
                    MOV     VAL1,A
                    RET

;                           ------------------------

ALOG_4BT5:          CJNE    A,#029,ALOG_4BT4
```

```
                MOV     A,VAL1
                ANL     A,#11111000B
                SWAP    A
                RL      A
                MOV     VAL1,A

                MOV     A,VAL2
                ANL     A,#00000111B
                SWAP    A
                RL      A
                XRL     VAL1,A

                MOV     A,VAL2
                ANL     A,#11111000B
                SWAP    A
                RL      A
                MOV     VAL2,A

                MOV     A,VAL3
                ANL     A,#00000111B
                SWAP    A
                RL      A
                XRL     VAL2,A

                MOV     A,VAL3
                ANL     A,#11111000B
                SWAP    A
                RL      A
                MOV     VAL3,A

                MOV     A,VAL4
                ANL     A,#00000111B
                SWAP    A
                RL      A
                XRL     VAL3,A

                MOV     A,VAL4
                ANL     A,#11111000B
                SWAP    A
                RL      A
                SETB    ACC.5
                MOV     VAL4,A
                RET

;                       ------------------------

ALOG_4BT4:      CJNE    A,#028,ALOG_4BT3

                MOV     A,VAL1
                ANL     A,#11110000B
                SWAP    A
                MOV     VAL1,A

                MOV     A,VAL2
                ANL     A,#00001111B
                SWAP    A
                XRL     VAL1,A

                MOV     A,VAL2
                ANL     A,#11110000B
                SWAP    A
                MOV     VAL2,A

                MOV     A,VAL3
                ANL     A,#00001111B
                SWAP    A
                XRL     VAL2,A

                MOV     A,VAL3
                ANL     A,#11110000B
                SWAP    A
                MOV     VAL3,A
```

```
                        MOV     A,VAL4
                        ANL     A,#00001111B
                        SWAP    A
                        XRL     VAL3,A

                        MOV     A,VAL4
                        ANL     A,#11110000B
                        SWAP    A
                        SETB    ACC.4
                        MOV     VAL4,A
                        RET
;                               ------------------------
ALOG_4BT3:              CJNE    A,#027,ALOG_4BT2

                        MOV     A,VAL1
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        MOV     VAL1,A

                        MOV     A,VAL2
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        XRL     VAL1,A

                        MOV     A,VAL2
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        MOV     VAL2,A

                        MOV     A,VAL3
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        XRL     VAL2,A

                        MOV     A,VAL3
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        MOV     VAL3,A

                        MOV     A,VAL4
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        XRL     VAL3,A

                        MOV     A,VAL4
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        SETB    ACC.3
                        MOV     VAL4,A
                        RET
;                               ------------------------
ALOG_4BT2:              CJNE    A,#026,ALOG_4BT1

                        MOV     A,VAL1
                        ANL     A,#11000000B
                        RL      A
                        RL      A
                        MOV     VAL1,A

                        MOV     A,VAL2
```

```
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    XRL     VAL1,A

                    MOV     A,VAL2
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    MOV     VAL2,A

                    MOV     A,VAL3
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    XRL     VAL2,A

                    MOV     A,VAL3
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    MOV     VAL3,A

                    MOV     A,VAL4
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    XRL     VAL3,A

                    MOV     A,VAL4
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    SETB    ACC.2
                    MOV     VAL4,A
                    RET

;                           ----------------------

ALOG_4BT1:          CJNE    A,#025,ALOG_4BT0

                    MOV     A,VAL1
                    ANL     A,#10000000B
                    RL      A
                    MOV     VAL1,A

                    MOV     A,VAL2
                    ANL     A,#01111111B
                    RL      A
                    XRL     VAL1,A

                    MOV     A,VAL2
                    ANL     A,#10000000B
                    RL      A
                    MOV     VAL2,A

                    MOV     A,VAL3
                    ANL     A,#01111111B
                    RL      A
                    XRL     VAL2,A

                    MOV     A,VAL3
                    ANL     A,#10000000B
                    RL      A
                    MOV     VAL3,A

                    MOV     A,VAL4
                    ANL     A,#01111111B
                    RL      A
                    XRL     VAL3,A
```

```
                    MOV     A,VAL4
                    ANL     A,#10000000B
                    RL      A
                    SETB    ACC.1
                    MOV     VAL4,A
                    RET

;                           ------------------------

ALOG_4BT0:          CJNE    A,#024,ALOG_3BT7

                    MOV     VAL1,VAL2
                    MOV     VAL2,VAL3
                    MOV     VAL3,VAL4
                    MOV     VAL4,#001H
                    RET

;                           ************************

ALOG_3BT7:          CJNE    A,#015,ALOG_3BTHL       ; <= 16 ?

ALOG_CHK_2BYTE:     JMP     ALOG_A2_BT7             ; = 16

ALOG_3BTHL:         JC      ALOG_CHK_2BYTE          ; < 16

                    CJNE    A,#023,ALOG_3BT6

                    MOV     A,VAL2
                    ANL     A,#11111110B
                    RR      A
                    MOV     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#00000001B
                    RR      A
                    XRL     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#11111110B
                    RR      A
                    MOV     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#00000001B
                    RR      A
                    XRL     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#11111110B
                    RR      A
                    SETB    ACC.7
                    MOV     VAL3,A

                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_3BT6:          CJNE    A,#022,ALOG_3BT5

                    MOV     A,VAL2
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    MOV     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    XRL     VAL1,A
```

```
                MOV     A,VAL3
                ANL     A,#11111100B
                RR      A
                RR      A
                MOV     VAL2,A

                MOV     A,VAL4
                ANL     A,#00000011B
                RR      A
                RR      A
                XRL     VAL2,A

                MOV     A,VAL4
                ANL     A,#11111100B
                RR      A
                RR      A
                SETB    ACC.6
                MOV     VAL3,A

                MOV     VAL4,#000H
                RET

;                       ------------------------

ALOG_3BT5:      CJNE    A,#021,ALOG_3BT4

                MOV     A,VAL2
                ANL     A,#11111000B
                SWAP    A
                RL      A
                MOV     VAL1,A

                MOV     A,VAL3
                ANL     A,#00000111B
                SWAP    A
                RL      A
                XRL     VAL1,A

                MOV     A,VAL3
                ANL     A,#11111000B
                SWAP    A
                RL      A
                MOV     VAL2,A

                MOV     A,VAL4
                ANL     A,#00000111B
                SWAP    A
                RL      A
                XRL     VAL2,A


                MOV     A,VAL4
                ANL     A,#11111000B
                SWAP    A
                RL      A
                SETB    ACC.5
                MOV     VAL3,A

                MOV     VAL4,#000H
                RET

;                       ------------------------

ALOG_3BT4:      CJNE    A,#020,ALOG_3BT3

                MOV     A,VAL2
                ANL     A,#11110000B
                SWAP    A
                MOV     VAL1,A

                MOV     A,VAL3
                ANL     A,#00001111B
```

```
                    SWAP    A
                    XRL     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#11110000B
                    SWAP    A
                    MOV     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#00001111B
                    SWAP    A
                    XRL     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#11110000B
                    SWAP    A
                    SETB    ACC.4
                    MOV     VAL3,A

                    MOV     VAL4,#000H
                    RET
;                           ------------------------
ALOG_3BT3:          CJNE    A,#019,ALOG_3BT2

                    MOV     A,VAL2
                    ANL     A,#11100000B
                    SWAP    A
                    RR      A
                    MOV     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#00011111B
                    SWAP    A
                    RR      A
                    XRL     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#11100000B
                    SWAP    A
                    RR      A
                    MOV     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#00011111B
                    SWAP    A
                    RR      A
                    XRL     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#11100000B
                    SWAP    A
                    RR      A
                    SETB    ACC.3
                    MOV     VAL3,A

                    MOV     VAL4,#000H
                    RET
;                           ------------------------
ALOG_3BT2:          CJNE    A,#018,ALOG_3BT1

                    MOV     A,VAL2
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    MOV     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#00111111B
```

```
                    RL      A
                    RL      A
                    XRL     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    MOV     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    XRL     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    SETB    ACC.2
                    MOV     VAL3,A

                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_3BT1:          CJNE    A,#017,ALOG_3BT0

                    MOV     A,VAL2
                    ANL     A,#10000000B
                    RL      A
                    MOV     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#01111111B
                    RL      A
                    XRL     VAL1,A

                    MOV     A,VAL3
                    ANL     A,#10000000B
                    RL      A
                    MOV     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#01111111B
                    RL      A
                    XRL     VAL2,A

                    MOV     A,VAL4
                    ANL     A,#10000000B
                    RL      A
                    SETB    ACC.1
                    MOV     VAL3,A

                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_3BT0:          CJNE    A,#016,ALOG_2BT7

                    MOV     VAL1,VAL3
                    MOV     VAL2,VAL4
                    MOV     VAL3,#001H
                    MOV     VAL4,#000H
                    RET

;                           ************************
```

```
ALOG_2BT7:          CJNE    A,#007,ALOG_2BTHL       ; <= 16 ?
ALOG_CHK_1BYTE:     JMP     ALOG_A1_BT7             ; = 16
ALOG_2BTHL:         JC      ALOG_CHK_1BYTE          ; < 16
                    CJNE    A,#015,ALOG_2BT6

                    MOV     A,VAL3
                    ANL     A,#11111110B
                    RR      A
                    MOV     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#00000001B
                    RR      A
                    XRL     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#11111110B
                    RR      A
                    SETB    ACC.7
                    MOV     VAL2,A

                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET
;                           ------------------------
ALOG_2BT6:          CJNE    A,#014,ALOG_2BT5

                    MOV     A,VAL3
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    MOV     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#00000011B
                    RR      A
                    RR      A
                    XRL     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    SETB    ACC.6
                    MOV     VAL2,A

                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET
;                           ------------------------
ALOG_2BT5:          CJNE    A,#013,ALOG_2BT4

                    MOV     A,VAL3
                    ANL     A,#11111000B
                    SWAP    A
                    RL      A
                    MOV     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#00000111B
                    SWAP    A
                    RL      A
                    XRL     VAL1,A
```

```
                        MOV     A,VAL4
                        ANL     A,#11111000B
                        SWAP    A
                        RL      A
                        SETB    ACC.5
                        MOV     VAL2,A

                        MOV     VAL3,#000H
                        MOV     VAL4,#000H
                        RET

;                               ------------------------

ALOG_2BT4:              CJNE    A,#012,ALOG_2BT3

                        MOV     A,VAL3
                        ANL     A,#11110000B
                        SWAP    A
                        MOV     VAL1,A

                        MOV     A,VAL4
                        ANL     A,#00001111B
                        SWAP    A
                        XRL     VAL1,A

                        MOV     A,VAL4
                        ANL     A,#11110000B
                        SWAP    A
                        SETB    ACC.4
                        MOV     VAL2,A

                        MOV     VAL3,#000H
                        MOV     VAL4,#000H
                        RET

;                               ------------------------

ALOG_2BT3:              CJNE    A,#011,ALOG_2BT2

                        MOV     A,VAL3
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        MOV     VAL1,A

                        MOV     A,VAL4
                        ANL     A,#00011111B
                        SWAP    A
                        RR      A
                        XRL     VAL1,A

                        MOV     A,VAL4
                        ANL     A,#11100000B
                        SWAP    A
                        RR      A
                        SETB    ACC.3
                        MOV     VAL2,A

                        MOV     VAL3,#000H
                        MOV     VAL4,#000H
                        RET

;                               ------------------------

ALOG_2BT2:              CJNE    A,#010,ALOG_2BT1

                        MOV     A,VAL3
                        ANL     A,#11000000B
                        RL      A
                        RL      A
                        MOV     VAL1,A
```

```
                    MOV     A,VAL4
                    ANL     A,#00111111B
                    RL      A
                    RL      A
                    XRL     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    SETB    ACC.2
                    MOV     VAL2,A

                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_2BT1:          CJNE    A,#009,ALOG_2BT0

                    MOV     A,VAL3
                    ANL     A,#10000000B
                    RL      A
                    MOV     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#01111111B
                    RL      A
                    XRL     VAL1,A

                    MOV     A,VAL4
                    ANL     A,#10000000B
                    RL      A
                    SETB    ACC.1
                    MOV     VAL2,A

                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_2BT0:          CJNE    A,#008,ALOG_1BT7

                    MOV     VAL1,VAL4
                    MOV     VAL2,#001H
                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                       ************************

ALOG_1BT7:          CJNE    A,#007,ALOG_1BT6

                    CLR     C
                    MOV     A,VAL4
                    RRC     A
                    SETB    ACC.7
                    MOV     VAL1,A


                    MOV     VAL2,#000H
                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_1BT6:          CJNE    A,#006,ALOG_1BT5
```

```
                    MOV     A,VAL4
                    ANL     A,#11111100B
                    RR      A
                    RR      A
                    SETB    ACC.6
                    MOV     VAL1,A

                    MOV     VAL2,#000H
                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_1BT5:          CJNE    A,#005,ALOG_1BT4

                    MOV     A,VAL4
                    ANL     A,#11111000B
                    SWAP    A
                    RL      A
                    SETB    ACC.5
                    MOV     VAL1,A

                    MOV     VAL2,#000H
                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_1BT4:          CJNE    A,#004,ALOG_1BT3

                    MOV     A,VAL4
                    ANL     A,#11110000B
                    SWAP    A
                    SETB    ACC.4
                    MOV     VAL1,A

                    MOV     VAL2,#000H
                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_1BT3:          CJNE    A,#003,ALOG_1BT2

                    MOV     A,VAL4
                    ANL     A,#11100000B
                    SWAP    A
                    RR      A
                    SETB    ACC.3
                    MOV     VAL1,A

                    MOV     VAL2,#000H
                    MOV     VAL3,#000H
                    MOV     VAL4,#000H
                    RET

;                           ------------------------

ALOG_1BT2:          CJNE    A,#002,ALOG_1BT1

                    MOV     A,VAL4
                    ANL     A,#11000000B
                    RL      A
                    RL      A
                    SETB    ACC.2
                    MOV     VAL1,A

                    MOV     VAL2,#000H
                    MOV     VAL3,#000H
```

```
                        MOV     VAL4,#000H
                        RET

;                               ------------------------

ALOG_1BT1:              CJNE    A,#001,ALOG_1BT0

                        MOV     A,VAL1
                        ANL     A,#10000000B
                        RL      A
                        SETB    ACC.1
                        MOV     VAL1,A

                        MOV     VAL2,#000H
                        MOV     VAL3,#000H
                        MOV     VAL4,#000H
                        RET

;                               ------------------------

ALOG_1BT0:              MOV     VAL1,#001H
                        MOV     VAL2,#000H
                        MOV     VAL3,#000H
                        MOV     VAL4,#000H
                        RET

;                       ************************
```

```
;                    Logarithm Correction Table

;This is the correction table for the logrithm generators.

;               ****************************************

LOGTBL:   DW    07000H,0DF00H,04D01H,0B901H,02502H,08E02H,0F602H,05D03H,0C303H,02704H
          DW    08904H,0EB04H,04B05H,0AA05H,00706H,06406H,0BF06H,01807H,07107H,0C807H
          DW    01E08H,07308H,0C608H,01809H,06909H,0B909H,0080AH,0550AH,0A20AH,0ED0AH
          DW    0370BH,0800BH,0C80BH,00E0CH,0540CH,0980CH,0DB0CH,01D0DH,05E0DH,09E0DH
          DW    0DD0DH,01B0EH,0580EH,0930EH,0CE0EH,0080FH,0400FH,0780FH,0AE0FH,0E40FH
          DW    01810H,04C10H,07E10H,0B010H,0E010H,01011H,03E11H,06C11H,09911H,0C411H
          DW    0EF11H,01912H,04212H,06A12H,09012H,0B712H,0DC12H,00013H,02313H,04613H
          DW    06713H,08813H,0A813H,0C713H,0E513H,00214H,01F14H,03A14H,05514H,06E14H
          DW    08714H,0A014H,0B714H,0CD14H,0E314H,0F814H,00C15H,01F15H,03215H,04315H
          DW    05415H,06415H,07415H,08215H,09015H,09D15H,0A915H,0B515H,0BF15H,0C915H
          DW    0D215H,0DB15H,0E315H,0EA15H,0F015H,0F615H,0FA15H,0FE15H,00216H,00516H
          DW    00616H,00816H,00816H,00816H,00716H,00616H,00416H,00116H,0FD15H,0F915H
          DW    0F415H,0EF15H,0E915H,0E215H,0DA15H,0D215H,0C915H,0C015H,0B615H,0AB15H
          DW    0A015H,09415H,08715H,07A15H,06C15H,05D15H,04E15H,03E15H,02E15H,01D15H
          DW    00C15H,0F914H,0E714H,0D314H,0BF14H,0AB14H,09614H,08014H,06A14H,05314H
          DW    03C14H,02414H,00B14H,0F213H,0D813H,0BE13H,0A313H,08813H,06C13H,05013H
          DW    03313H,01513H,0F712H,0D812H,0B912H,09A12H,07912H,05912H,03712H,01612H
          DW    0F311H,0D011H,0AD11H,08911H,06511H,04011H,01B11H,0F510H,0CE10H,0A710H
          DW    08010H,05810H,03010H,00710H,0DD0FH,0B40FH,0890FH,05E0FH,0330FH,0070FH
          DW    0DB0EH,0AE0EH,0810EH,0540EH,0250EH,0F70DH,0C80DH,0980DH,0680DH,0380DH
          DW    0070DH,0D60CH,0A40CH,0720CH,03F0CH,00C0CH,0D80BH,0A40BH,0700BH,03B0BH
          DW    0060BH,0D00AH,09A0AH,0630AH,02C0AH,0F409H,0BD09H,08409H,04C09H,01209H
          DW    0D908H,09F08H,06408H,02A08H,0EE07H,0B307H,07707H,03A07H,0FD06H,0C006H
          DW    08306H,04406H,00606H,0C705H,08805H,04805H,00805H,0C804H,08704H,04604H
          DW    00404H,0C203H,08003H,03D03H,0FA02H,0B702H,07302H,02F02H,0EA01H,0A501H
          DW    06001H,01A01H,0D400H,08E00H,04700H,02300H

;                    ************************************

;       The following "Basic" program was used to develop the 2
byte ;error correction table. To reduce the required code time for
Log ;and Anti-Log conversions, the bytes were reversed in the
actual ;code table.  The Basic program, however, will produce a
normal ;HiByte, LoByte arrangement.


;       5 'SAVE "A:LOG.BAS
;       7 CLOSE #1
;       8 OPEN "O",1,"LOGTBL"
;       10 FOR MANT = 1 TO 255
;       20 ER = 65536 * (LOG(MANT + 256) / LOG(2) - 8 - MANT / 256)
;       30 PRINT MANT,INT(ER),HEX$(INT(ER))"H"
;       32 NUM$=HEX$(INT(ER)) + "H"
;       35 PRINT #1,NUM$
;       40 NEXT MANT
;       45 CLOSE #1

;                    **************************

        END
```

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